

**1. AMENDMENT (LISTING OF THE CLAIMS):**

*This listing of claims will replace all prior versions and listing of claims in the application.*

1. (Previously Presented) A composition comprising recombinant adeno-associated viral (rAAV) vector that comprises a nucleic acid segment encoding a pro-opiomelanocortin polypeptide operably linked to a promoter capable of expressing said segment in a host cell that comprises said vector, wherein said polypeptide activates the central melanocortin pathway in a mammal that expresses said vector.
2. (Previously Presented) The composition of claim 1, wherein said rAAV vector further comprises an enhancer sequence operably linked to said nucleic acid segment.
3. (Previously Presented) The composition of claim 1, wherein said rAAV vector further comprises a post-transcriptional regulatory element operably linked to said nucleic acid segment.
4. (Original) The composition of claim 1, wherein said nucleic acid segment encodes a mammalian pro-opiomelanocortin polypeptide.
5. (Original) The composition of claim 1, wherein said promoter is an inducible promoter.
6. (Previously Presented) The composition of claim 1, further comprising a pharmaceutically-acceptable excipient, diluent, or buffer.

7. (Previously Presented) The composition of claim 1, wherein said rAAV vector is comprised within an rAAV virion.
8. (Previously Presented) The composition of claim 1, further comprising a liposome, a lipid, or a lipid complex.
9. (Previously Presented) The composition of claim 1, further comprising a microsphere or a nanoparticle.
10. (Previously Presented) The composition of claim 1, formulated for administration to a human.
11. (Original) The composition of claim 1, comprised within a kit for diagnosing, preventing, treating or ameliorating the symptoms of a pro-opiomelanocortin polypeptide deficiency condition in a mammal.
12. (Previously Presented) A recombinant adeno-associated viral particle comprising a nucleic acid segment encoding a pro-opiomelanocortin polypeptide operably linked to a promoter capable of expressing said segment in a host cell that comprises said vector, wherein said polypeptide activates the central melanocortin pathway in a mammalian cell that expresses said vector.

13. (Withdrawn) A method for treating or ameliorating the symptoms of a pro-opiomelanocortin polypeptide deficiency condition in a mammal, said method comprising administering to said mammal the composition of claim 1; in an amount and for a time sufficient to treat or ameliorate the symptoms of said deficiency in said mammal.
14. (Withdrawn) The method of claim 13, wherein said deficiency condition results in polyphagia, hyperinsulinemia, adiposity, an eating disorder, or body weight gain in said mammal.
15. (Withdrawn) The method of claim 13, wherein said composition is administered to said mammal in an amount and for a time sufficient to decrease the body weight of said mammal, or to decrease the rate of body weight gain in said mammal.
16. (Withdrawn) The method of claim 13, wherein said composition is administered to said mammal intramuscularly, intravenously, intrathecally, or intracerebroventricularly.
17. (Withdrawn) A method for providing a mammal in need thereof with a therapeutically-effective amount of a pro-opiomelanocortin polypeptide, said method comprising introducing into suitable cells or a tissue of said mammal, an amount of the composition of claim 1; for a time effective to provide said mammal with a therapeutically-effective amount of said pro-opiomelanocortin polypeptide.

18. (Withdrawn) The method of claim 17, wherein said composition is introduced into said cells or said tissue *ex vivo*; and further wherein said method comprises the additional step of introducing the resulting cells or tissue that comprise said composition into said mammal.
19. (Withdrawn) The method of claim 17, wherein said mammal has been diagnosed with obesity, adiposity, or suffers from excessive body weight gain.
20. (Withdrawn) A method for controlling body weight gain or food intake in a mammal, said method comprising at least the step of introducing into a cell or tissue of the brain of said mammal, a therapeutically-effective amount of the composition of claim 1, for a time effective to control said body weight gain or said food intake in said mammal.
21. (Previously Presented) The composition of claim 5, wherein said promoter is a chicken  $\beta$ -actin promoter.
22. (Currently Amended) The composition of claim 10, formulated for direct intracerebroventricular administration to a ~~mammalian~~human brain.
23. (Previously Presented) The composition of claim 22, formulated for intracerebroventricular administration to the arcuate nucleus of a human hypothalamus.

24. (Previously Presented) The composition of claim 1, comprised within an isolated mammalian host cell.
25. (Previously Presented) The composition of claim 1, comprised within an isolated human host cell.
26. (Previously Presented) The composition of claim 1, comprised within an AAV virion or viral particle.
27. (Previously Presented) The composition of claim 1, comprised within a plurality of infectious AAV particles.
28. (Previously Presented) A virion or viral particle for the transfection of mammalian cells, comprising the composition of claim 1.
29. (Previously Presented) An isolated mammalian host cell comprising the composition of claim 1.
30. (Previously Presented) A kit comprising:
  - (a) the composition of claim 1; and
  - (b) instructions for using said kit.

31. (Previously Presented) A kit comprising in suitable container means the composition of claim 1; and instructions for using said kit.
32. (Previously Presented) A kit comprising, in suitable container means: (a) a composition that comprises an adeno-associated viral vector comprising a nucleic acid segment that encodes a pro-opiomelanocortin polypeptide operably linked to a promoter capable of expressing said segment in a mammalian host cell, and (b) instructions for using said kit in the diagnosis, prevention, or treatment of a pro-opiomelanocortin polypeptide deficiency in said mammalian host cell.
33. (Previously Presented) The composition of claim 1, wherein said mammal has been diagnosed with obesity, adiposity, or suffers from excessive body weight gain.
34. (Previously Presented) The composition of claim 1, wherein said mammal has a pro-opiomelanocortin polypeptide deficiency condition that results in polyphagia, hyperinsulinemia, adiposity, an eating disorder, or body weight gain in said mammal.
35. (Previously Presented) The composition of claim 6, formulated for intracerebroventricular administration to said mammal.
36. (Previously Presented) The composition of claim 35, formulated for administration to a human brain.

37. (Previously Presented) The composition of claim 1, wherein said adeno-associated viral vector is a serotype 1, serotype 2, serotype 3, serotype 4, serotype 5, or serotype 6 vector.
38. (Previously Presented) The composition of claim 2, wherein said enhancer sequence comprises a cytomegalovirus immediate early enhancer sequence.
39. (Previously Presented) The composition of claim 3, wherein said post-transcriptional regulatory element comprises a woodchuck hepatitis virus post-transcriptional regulatory element.
40. (Previously Presented) The composition of claim 1, wherein said promoter comprises a chicken  $\beta$ -actin promoter.